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REPORTS
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SERVICE

1940

INSTRUCTIONS FOR 1940
REGIONAL BARK BEETLE SURVEY
OREGON AND WASHINGTON

August 1, 1940

INSTRUCTIONS FOR 1940
REGIONAL BARK BEETLE SURVEY
OREGON AND WASHINGTON

GENERAL SURVEY PLAN.

In order to determine accurately the status of current pine beetle infestations throughout the ponderosa pine region of Oregon and Washington, another extensive and intensive survey will be conducted through the cooperative efforts of the Forest Service, the Indian Service, and the Bureau of Entomology and Plant Quarantine during the summer of 1940. Such a survey is indispensable as a basis for determining centers of infestations and areas needing artificial control work. It is planned to conduct (1) intensive surveys on some 200 permanent half-section check plots, and (2) extensive or observational surveys over the region as a whole.

The intensive phase of the 1940 survey will be conducted on (1) National Forests by 3 three-man crews employed through the office of the Regional Forester; (2) Indian Reservations by crews of Indian Service personnel directed by Harold Weaver; and (3) State, Private, and Other Lands which cannot be conveniently covered by the above agencies, by one three-man crew employed through the Portland forest insect laboratory.

The extensive surveys will, as far as possible, be conducted by Messrs. Keen, Jaenicke, Weaver, Buckhorn, and Whiteside. These men will interpret the intensive survey data and make generalized estimates of current insect infestations for specific portions of the region with which they are most familiar.

In order to secure uniformity of survey methods, the Forest Service and Bureau crews will be assembled on the Deschutes National Forest at Camp Sisters, Camp Sherman, Oregon, for a period of approximately one week beginning August 1, 1940. These men will receive detailed instructions from Messrs. Jaenicke and Buckhorn, and as part of the training will cruise seven of the nine permanent survey plots on the Sisters Area of the Deschutes National Forest. At the end of this period, the men will be divided into crews and assigned to cover the survey plots on the several forests herein listed.

PURPOSE OF THE 1940 SURVEY.

The primary purpose of the 1940 survey will be: (1) To determine the distribution of and the intensity of recent pine beetle losses; (2) to determine the trend of the 1940 infestations, whether increasing or decreasing; and (3) to determine the present areas of epidemic infestations which are most in need of control work. As additional by-products of the survey, information and data will be obtained upon the Keen tree classification and the most hazardous areas from a beetle attack standpoint.

DETAILED SURVEY PLANS.

The plans and instructions for each broad division of the 1940 survey will be discussed separately.

I. INTENSIVE SURVEYS

The intensive survey work of the Forest Service and Bureau crews will be divided into two main divisions--(A) Field work and (B) Office work to be completed in the field.

A. INTENSIVE SURVEYS--FIELD WORK.

1. 320-Acre Permanent Survey Plots.

Object: On designated 320-acre survey plots to locate, blaze, mark, and record all ponderosa pine trees over 9 inches DBH-OB killed in 1939 but not marked in last year's survey, and all similar trees killed in 1940 up to the time of the survey.

Time Required: This field work will require approximately three-quarters of a day per 320-acre plot, with the remainder of the day for office work and moving camp.

Crew Personnel: One compassman and two spotters.

Forms to be Completed for Each Plot:

1. Summary of sample plot data - 1.
2. Section plat - 1 for 1939 pick-up, and 1 for 1940 losses.
3. Spotting record - 1 for 1939 pick-ups and 1 for 1940 losses for each spotter.
4. Tree heights - 1 per plot where indicated.

Essential Duties of Crew Members:

Compassman:

1. Locates the starting point on each plot--usually Tally 1.
2. Runs a compass line and paces the distance from Tallies 1, 3, 5, and 7 to the same Tally points on the opposite section line 1 mile (16 tallies) away.
3. Announces the end of each tally along his compass line.
4. Completes a separate "Section Plat" for the 1939 unmarked and the 1940 losses, as shown on the enclosed sample.
5. On the "1940 loss" map locates the main topographic features of the plot using standard map symbols.
6. Records tree heights on indicated plots. On a tree height form records the total height of at least 2 trees per tally. These heights are to be taken with an Abney

level and distributed over as many diameter classes as possible and from trees of all degrees of dominance regardless of age or vigor classes. These heights should be kept separate by quarter sections, as shown on the sample form.

Spotters:

1. Cruise a 5-chain (330-feet) strip on each side of the compass line.
2. Locate, blaze, mark, classify, and record all ponderosa pine trees above 9 inches DBH-OB killed in 1939 but not recorded last year and all similar trees killed so far in 1940.
3. Complete a separate "Spotting Record" for each year's loss as shown on the enclosed sample.
4. Each spotter will carefully record the total height of all "bug trees" spotted with an Abney level and enter height on "Spotting Record". Total heights to be measured to the nearest foot.
5. Each spotter will, where possible, secure 30 good and complete increment cores per 320-acre plot. Each core should be 4 inches long and taken from the 1940 "bug trees" on the plot. Where the current loss is lighter than 30 trees per half section, take cores from all 1940 bug trees. On each core, clearly mark with an indelible pencil: (a) DBH; (b) Tree class; (c) Tree number; (d) T., R., and Section; and (e) Mark an "X" on the cambium end of the core. All cores from one plot should be rolled lightly in a piece of paper with the ends of the cores open. On the paper mark the plot name, Forest, and date secured.
6. Each spotter will locate, blaze, and number all 1940 windthrown trees. A separate spotting record should be kept for this purpose. On this record give: tree number, DBH, logs, tree class. The number of the tree should be given to the compassman in the usual manner.

Essential Equipment for Crew Members:

Compassman:

1. Staff compass and Jacob staff with swivel securely mounted on the staff.
2. Tally register.
3. 5 x 8 tatum holder with 2 Section Plats, and 1 Tree Height form.
4. 4H pencil and eraser.
5. Abney level.

Each Spotter:

1. 2-pound axe and stone.
2. 5 x 8 tatum holder and spotting records.
3. Timber crayon.
4. 4H pencil and eraser.
5. Diameter tape.
6. Increment borer.
7. Abney level.
8. Tobacco can and indelible pencil.

B. INTENSIVE SURVEYS—OFFICE WORK IN THE FIELD.

It is planned to have each crew complete certain office work in order to have the 1940 survey data in a more useful form at the end of the field season. In order to have a clear understanding of the procedure to be followed, a completed set of forms is herein included.

1. General Instructions.
   1. Each crew leader will be responsible for the completion of the office work for his crew, but each member will have certain assignments in this work.
   2. The office work is to be kept up to date and completed after each plot has been finished.
   3. An attempt has been made to illustrate most of the conditions found in the field by completing a set of forms used in this survey. These should be studied. Other questions should be referred to the crew supervisor.

II. EXTENSIVE SURVEYS

(This is the second broad division of the 1940 regional bark beetle survey.)

PURPOSE.

In order to make generalized estimates of the current insect depredations in Oregon and Washington, it is planned to conduct another extensive or observational survey over the entire ponderosa pine region of Oregon and Washington. This survey will be conducted in the same manner as that of 1938 and 1939, and will supplement the data taken during the intensive survey. These surveys should be completed by October 1 in order to prepare the proper reports and control recommendations.

DIVISION OF THE REGION.

The ponderosa pine region will be divided among the crew supervisors as in 1938 and 1939. However, the exact division cannot be made at this time, but in general the survey crews and the areas for each supervisor will be as follows:

Crew Supervisor	Crew	Area
Keen, F. P.	1	K.F.P.A. areas, Rogue River, and Fremont National Forest.
Jaenicke, A. J.	2	Deschutes, Malheur, and Mt. Hood National Forests, and Lost Forest.
Buckhorn, W. J.	3	Ochoco, Whitman, and Wallowa National Forests.
Whiteside, J. M.	4	Umatilla National Forest and Washington Forests.

Mr. Harold Weaver will make similar estimates for the Klamath, Yakima, and Warm Springs Indian Reservations.

METHODS AND EQUIPMENT.

Depending on the refinements in the procedure as worked out last year, each man should be equipped with the following:

1. Letter-size tatum holder.
2. A set of Forest Service type maps on a quarter-inch to the mile scale, or a set of type maps made by the Portland forest insect laboratory on a half-inch to the mile scale.
3. A set of National Forest maps on a quarter-inch to the mile scale.
4. Vellum overlay sheets to fit the type maps.
5. A set of colored pencils.
6. A table showing the total 1939 loss and the losses spotted to date in 1940.

The 1939 losses are to be shown on a per-section basis, as was done last year, by showing either the number of trees killed per section, or by coloring the infestation, or both. The colors to be used are the same as for 1937, i.e.:

Degree of Infestation	Color	Pencil
0-25 trees per section. Normal	Blue	D 350
25-50 " " " "	Green	D 354½
50-100 " " " Light epidemic	Yellow	D 353
100-200 trees per section. Moderate epidemic.	Orange	D 324
200-400 " " " Heavy epidemic	Red	D 321½
Over 400 " " " Very heavy epidemic	Brown	D 343

SITE 47

SUMMARY OF SAMPLE PLOT DATA

FOREST Deschutes AREA Sisters

UNIT Metolius PLOT Squaw Cr. NO.

T. 15S R. 10E SEC. 20 E½ M. ACRES 32

Spotting Crew Smith T Doc James Date 9-11-40

NEW LOSS (Year) 1940

Brood	Groups			Singles	Total No. Trees
	No. of Groups	Av. Size	No. Trees in groups		
S	1	3	3	4	7
W				4	4
Total	1	3	3	8	11

No. Trees Green Total Trees per Sec. 22

No. Trees Colored Estimating Factor

Total Estimated Total

Percent Colored Map Color

RED TOPS

Year	Newly Marked	Previously Marked	Unmarked	Total
1939	14	23		37
19				
19				
19				
19				
Unknown Year				
TOTAL				

Map Color

3 Windfalls

To be used for: All 320-acre check plots. 1 per plot.

To be completed by: Crew leader.

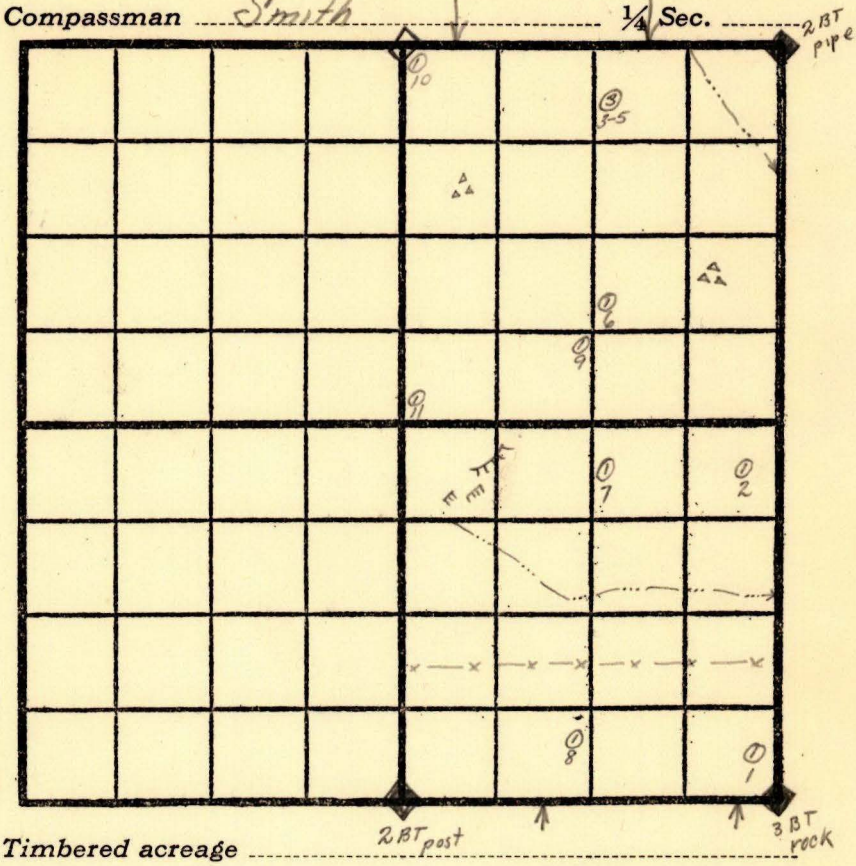
1940 Losses

SECTION PLAT

Project area Deschutes N.F. Unit Sisters Metolius Plot Squaw Cr.
~~Camp No.~~

Date 9-11-40 T. 15S R. 10E Sec. 20 E/2

Compassman Smith 1/4 Sec.



Timbered acreage

Percentage of Y. P. W. F. Juniper

Volume B. F. per acre Y. P.

Character of timber stand

Topography

General slope and exposure

Cruising time: days, hours.

Remarks:

1940 Loss	Trees	Volumes
S	7	6900
W	4	730
Total	11	7630

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SECTION PLAT

To be used for: All 320-acre check plots--2 per plot (1 for 1939 loss and 1 for 1940 loss.)

To be completed by: Compassman.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

1940 Losses

SPOTTING RECORD

Deschutes N.F

Project area Sisters Unit Metolius Plot Camp No. Squaw Cr.

Date 9-11-40 Spotter J B Doe T. 15S R. 10E Sec. 20 E/2

1940

Tree No.	Killed by	D B H	Logs	Volume	Season	Tree class	Total height	Remarks
1	Db	24	3	350	S	3C	65	Basal scar
2	FH	20	2	130	W	3D	63	
3	Db	42	6	2260	S	4B	126	Spike top
4	Db	38	5	1840	S	4C	114	
5	Db	18	2	120	S	3C	60	
6	Dm	16	1	60	W	2B	52	
7	IE	24	4	520	W	3C	85	
8	Db	30	5	1100	S	3B	105	Lightning strike
10	Uk	28	4	710	S	4B	82	Sour Sap
11	Db	24	4	520	S	4D	95	
14	Dm	10	1	20	W	2C	56	
		7	S	6900				
		4	W	730				
Totals,		11		7630				

Form EQ-38

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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

1940
WINDFALLS

SPOTTING RECORD

Deschutes NF

Project area Sisters Unit Metolius Plot Camp No. Squaw Cr.

Date 9-11-40 Spotter JB Doe T. 15S R. 10E Sec. 20E/2

Tree No.	Killed by	D B H	Logs	Volume		Tree class	Total height	Remarks
9		36	5	1640		4B	116	
12		22	3	300		3C	77	
13		26	4	660		3C	95	
Totals,	3			2,600				

Form EQ-38

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SPOTTING RECORD

To be used for: All 320-acre check plots--1 or more per spotter for 1939 loss; 1 or more per spotter for 1940 loss; and 1 per spotter for windthrown trees.

To be completed by: Each spotter.

Tree Heights on Permanent Sample Plot

Forest Deschutes Area Sisters ~~Sisters~~ Metolius

Plot Squaw Cr T. 15S R. 10E Sec. 20 E½

Cruiser Smith Date 9-11-40

D.B.H.	¼ Sec. NE		¼ Sec. SE	
	~~Class 1 and 2~~	~~Class 3 and 4~~ Ave	~~Class 1 and 2~~	Ave ~~Class 3 and 4~~
10	50 48 52	50	52 48 50	50
12	55 60 62 70	62	55 60 70 62	62
14	60 75 53 60	62	60 53 75 60	62
16	66 78	72	78 66	72
18	70 80 96	82	80 96 70	82
20	80 70 85	82	70 80 85	82
22	70 85 98 92	87	92 98 86 70	87
24	100 96	95	96 100	95
26	95 120 110 100	96	100 120 110 95	96
28				
30	110 120	115	120 110	115
32	120 110 96	109	110 96 120	109
34	130 126	128	130 126	128
36				
38				
40				
42				
44				
46				
48				
50				
52				
Total No.2 Heights				

TREE HEIGHTS

To be used for:

320-acre check plots on which tree heights are to be taken.

To be completed by:

Compassman.

PROGRESS REPORT OF CREW NO. _____

FOREST: DATE:

AREA	UNIT	PLOT	T.	R.	SEC.	DATE COMPLETED	1939 LOSS TOTAL NO. TREES	1940 LOSS NO. TREES SPOTTED	1940 LOSS ESTIMATED NO. TREES	REMARKS